

# Appendix A: Florida

## Introduction and Overview

Florida is an ecologically diverse region ranging in climate from the temperate to the subtropical. It is relatively flat with a maximum elevation in the north of approximately 330 feet, and much of the State lies below elevations of 100 feet. Northern Florida is within the southern temperate zone and consists of broad alluvial riparian habitats, and upland flats and ridges once dominated by longleaf pine communities. The central peninsula consists of broad flatlands once dominated by longleaf and slash pine, dry and wet prairies and sandy ridges with scrub and sandhill communities harboring numerous rare and endemic species. The southern tip of the peninsula, though heavily modified by development, still contains tropically-influenced hammocks, swamps, rocklands, and marshes of the Big Cypress Swamp, Everglades, and the Florida Keys.

Rivers originating in the southern Appalachians and Piedmont are an important ecological component in north Florida that harbor increasingly rare mollusk and fish species. Lakes are very common in the Florida peninsula, and Lake Okeechobee in south Florida is one of the largest lakes in North America. Numerous springs are also characteristic of the vast limestone regions of north and central Florida. Springs, limestone caves, and sinks support many rare aquatic invertebrates. Estuarine ecosystems include productive salt marsh communities in the northern half of the state, mangrove communities in the southern half of the peninsula and seagrass communities statewide (Florida Fish and Wildlife Conservation Commission (FWC) - Comprehensive Wildlife Conservation Strategy Plan).

In Florida, there are 57 animals and 55 plants federally listed as endangered or threatened species or experimental non-essential by the U.S. Fish and Wildlife Service (Service) under the Endangered Species Act.



*Florida scrub jay*

In addition, FWC lists 118 animals as State endangered, threatened, and species of special concern. Furthermore, the Florida Department of Agriculture and Consumer Sciences lists 55 plants as State listed endangered or threatened.

Numerous habitats in Florida provide forage, refuge, cover, and staging areas for several species of migratory waterfowl, wading birds, shorebirds and neotropical migrants and other game and non-game mammals, reptiles, amphibians, fish and invertebrates.

## Priority Habitats

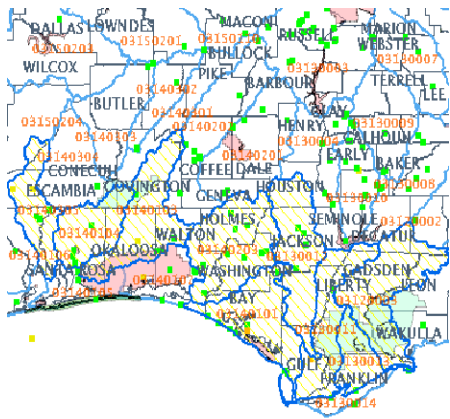
As Florida grows, a number of threats such as habitat loss and fragmentation, degradation of water resources, invasive plants and animals, incompatible fire management, and management of the physical environment continue to alter many of Florida's delicate and imperiled habitats. In concert with FWC's Comprehensive Wildlife Conservation Strategy Plan, which lists 45 different habitat types, the Service, through our strategic planning process, has identified specific habitats with the highest likelihood of threats or habitats that have a substantial resource value to federally listed animals and plants, migratory birds, inter-jurisdictional fisheries, marine mammals, and Service owned lands. Three unique important habitats, in addition to invasive species management, have been identified by the Service as focus areas for the State of Florida.

The focus of the Partners Program is on restoration of native habitats (i.e., longleaf pine, sandhill scrub), restoration of degraded streams and wetlands, and eradication of invasive and exotic species. The Partners Program in Florida has been active since 1996 and has received overwhelming acceptance by private landowners. The result has been an innovative partnership between the Federal government and the private landowner which provides habitat benefits to Florida's fish and wildlife. While the Partners Program has worked diligently to develop restoration projects with individual landowners, it has also made a major effort to form partnerships with conservation organizations, state agencies, and local units of governments to create habitat restoration initiatives for the benefit of the private landowner and Florida's wildlife. The Partners Program has worked with the FWC to develop a private landowner assistance program to meet specific restoration goals that are identified in their strategic plan.

## Xeric/Sandhill Scrub Focus Area

This habitat occurs on areas of deep, well-drained, infertile sandy soils that are typically white or near white. Scrub has a patchy distribution and occurs in both inland and coastal areas, from the panhandle through subtropical regions of the peninsula. The largest and most important patches of scrub occur along the central ridge of the peninsula near Ocala and in Polk and Highlands counties. This habitat is fire-dependent; it is maintained by fires that are usually very hot or intense, but occur infrequently at intervals of 10-20 years, or more. Generally, scrub is dominated by evergreen, or nearly evergreen, oaks and/or Florida rosemary, with or without a pine overstory.

A relatively large suite of plant species is endemic to scrub (e.g., scrub holly and inopina oak); the rarest endemic plant species are restricted to the Lake Wales area of the central ridge (e.g., pygmy fringe tree and scrub plum).



*Xeric scrub focus area*

Some species of wildlife also are endemic or largely restricted to scrub habitat (e.g., Florida scrub-jay and sand skink). Several types of scrub are recognized. Oak scrub is a hardwood community typically consisting of clumped patches of low growing oaks interspersed with patches of bare, white sand. Pines are uncommon or absent. Oak scrub is dominated by myrtle oak, Chapman's oak, sand-live oak, inopina oak, scrub holly, scrub plum, scrub hickory, rosemary, scrub palmetto, and saw palmetto.

Sand pine scrub occurs on former shorelines and islands of ancient seas. This plant community is dominated by an overstory of sand pine and has an understory of myrtle oak, Chapman's oak, sand-live oak, rusty lyonia, wild olive, scrub bay, and scrub holly. Ground cover is usually sparse to absent, especially in mature stands, and rosemary and lichens occur in some open areas. Rosemary scrub has few or no sand pines or scrub oaks but is dominated by rosemary with scattered lichen cover, scrub hypericum, and paper nailwort (FWC 2005).

#### *Priority Habitat*

Upland: Xeric Sandhill Scrub

*Five-Year Target (FY2007-2011)*  
2,500 acres

#### *Focus Species\**

Eastern indigo snake (T); bald eagle (T); Florida scrub jay (T); Florida panther (E); Kirkland's warbler (E); bluetail mole skink (T); sand skink (T); gopher tortoise (SOC) and 37 federally listed plant species, endemic to xeric scrub



*Sandhill Scrub, Florida*

#### *Threats*

Loss of xeric scrub habitat with conversion to agriculture; lack of prescribed burning; residential and commercial development

#### *Action Strategies*

Partner with, share costs with, and provide technical assistance to landowners and other partners to improve existing overgrown xeric scrub and restore scrub on appropriate sites where it has been removed. Practices: include mechanical reduction of vegetation; burn; apply herbicide; establish and maintain firebreaks; plant native xeric scrub vegetation.

#### **Xeric/Mesic/Hydric Pine Flatwoods (i.e. longleaf pine) Focus Area**

Before human settlement, much of north and central Florida was covered by natural pineland. Much of this habitat type has been altered by humans as a result of conversion to agriculture and pine plantations, alteration of fire regimes, and introduced species. Pine flatwoods occur on flat sandy terrain where the overstory is characterized by longleaf pine, slash pine, or pond pine. The type of pineland habitat present is usually related to soil differences and small variations in topography.

Hydroperiod is an important factor determining what kind of pineland is represented.

Generally, flatwoods dominated by longleaf pine occur on well-drained sites while pond pine-dominated sites occur in poorly drained areas, and slash pine dominated sites occupy intermediate or moderately moist



*Longleaf Pine  
Focus Area*

areas. The understory and ground cover within these three communities are somewhat similar and include several common species such as saw palmetto, gallberry, wax myrtle, and a wide variety of grasses and herbs. Generally, wiregrass and runner oak dominate longleaf pine sites; fetterbush and bay trees are found in pond pine areas, while saw palmetto, gallberry, and rusty lyonia occupy slash pine flatwoods sites. Scrubby flatwoods habitat typically occurs on drier ridges, many of which formed originally on or near old coastal dunes. Longleaf pine or slash pine dominates the overstory, whereas the ground cover is similar to that present in xeric oak scrub habitat. Cypress domes, bay heads, titi swamps, and freshwater marshes are commonly interspersed in isolated depressions throughout natural pineland habitats. Fire is an important factor that helps to maintain and shape Natural Pineland communities; almost all of the plants and animals found here are adapted to having fires occur at least every one to eight years (FWC 2006).

#### *Priority Habitat*

Upland: Longleaf Pine

*Five-Year Target (FY2007-2011)*  
2,000 acres

#### *Focus Species\**

Eastern indigo snake (T); bald eagle (T); red-cockaded woodpecker (T); flatwoods salamander (T); gopher tortoise (SOC)





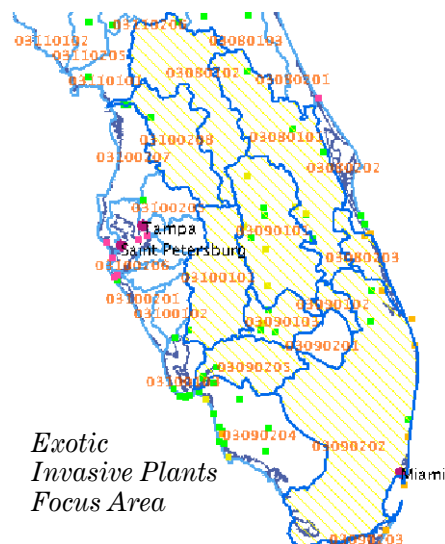
Stand of Longleaf Pine

### Threats

Loss of longleaf pine habitat to monoculture forestry; lack of prescribed burning; residential and commercial development

### Action Strategies

Partner with, share costs with, and provide technical assistance to landowners and other partners to improve existing degraded longleaf pine stands and restore longleaf pine on appropriate sites where it has been removed. Practices: Thin, burn, apply herbicide, establish and maintain firebreaks, plant longleaf seedlings, plant ground cover.



Exotic Invasive Plants Focus Area

### Exotic Invasive Plant Species Focus Area

This focus area encompasses all or part of 12 counties: Polk, Highlands, Osceola, Orange, Hardee, Lake, Brevard, Desoto, Pinellas, Hillsborough, Sarasota and Manatee.



Invasive Climbing Fern

Two species of invasive non-native climbing ferns are invading and spreading in conservation habitat in central Florida that is host to seven federal and 54 State listed species. Nestled in that region is the 2.3 million-year-old ancient scrub ecosystem of the Lake Wales Ridge, Florida's oldest natural system. Old world climbing fern is moving in from south Florida and Japanese climbing fern is spreading from the north. Both types of climbing fern can grow over and choke other plants, increase fire intensity by carrying fire into tree canopies, and destroy wildlife habitat and working lands. Long-term success in conserving listed species in central Florida depends on combating these invasive species before they become widespread. Control of climbing fern depends on combining efforts on private lands with those on public lands. Private lands infested with climbing fern provides little habitat for wildlife and serve as a seed source to re-infest public conservation lands.

The Partners Program is also working with private landowners and other local interest groups to develop initiatives to raise awareness of invasive/exotic species and to implement treatment programs. Costs associated with the treatment of invasive species may range from \$50 to \$1,200 acre.

### Priority Habitat

Exotic Invasives (*Lygodium* spp.; Climbing ferns)

### Five-Year Target (FY2007-2011)

1,250 acres

### Focus Species\*

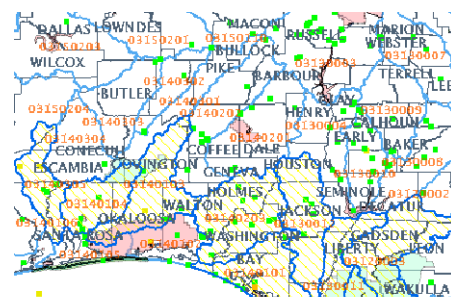
Eastern indigo snake (T); bald eagle (T); wood stork (E); Florida scrub jay (T); Everglades snail kite (E); Florida panther (E); beautiful pawpaw (E); and 47 additional state listed species

### Threats

Exotic invasives out compete native vegetation, including threatened and endangered plant species and can carry fire into the canopy of forests, effectively killing desired tree species.

### Action Strategies

Work with partners and affected landowners to control spread of climbing ferns and other exotic and invasive species by use of chemicals and prescribed fire. Revegetate treated areas with native vegetation as necessary. Work with other partners to explore biological control opportunities.



Florida Panhandle Aquatic Focus Area

### Florida Panhandle Stream/Riparian Focus Area

Alluvial streams originate in high uplands that are composed of sand and silt based clays, thereby giving these streams a natural high turbidity. These streams only occur in the north region of Florida and are characterized as having meandering channels with a mix of sand bottom, sand and gravel, and areas of bedrock or shoals. Large alluvial streams have flow rates and sediment loads that range from low to high (flood) stages, consequently causing water depth and other water quality parameters to fluctuate substantially with seasonal rainfall patterns. Flood stages which overflow the banks and inundate the adjacent

floodplain and bottomland hardwood forest communities usually occur one or two times each year during winter or early spring. Due to the high natural turbidity of these streams, there is minimal vegetation that is mostly confined to channel edges or backwaters. Typical plants include spatterdock, duckweed, American lotus, and water hyssop.

Eleven federally listed species benefit from activities undertaken to improve riparian areas and water quality within this focus area. Additionally, stream and watershed restoration activities, as a result of the involvement of the Partners Program, are helping to minimize the future need to list candidate species or species of concern. Thirteen invertebrate species (primarily mussels), three fish species, and two reptile species (turtles), currently listed as candidate species or species where listing is currently being considered, all inhabit the large alluvial streams within this focus areas.

### *Priority Habitat* Riparian

### *Five-Year Target (FY2007-2011)* Six miles

### *Focus Species\**

Gulf sturgeon (T); Okaloosa darter (E); bald eagle (T); west Indian manatee (E); fat threeridge mussel (E); chipola slabshell mussel (T); purple bankclimber mussel (T); shineyrayed pocketbook mussel (E); Gulf moccasinshell mussel (E); Ochlockonee moccasinshell mussel (E); oval pigtoe mussel (E)

### *Threats*

Siltation from poor agriculture and forestry practices, residential and commercial development, road construction and maintenance, discharge of pollutants, habitat alterations, and other natural and human-related factors.

### *Action Strategies*

Work with partners and landowners to identify degraded sites. Contact and encourage landowners to participate in available conservation programs. Actions: Fence livestock out of streams, provide alternative watering sources, install heavy use area protection in streams, revegetate as necessary.

\*E=federally listed endangered species; T=federally listed threatened species; C=federal candidate species; SOC=species of concern

### **Stakeholders Involved**

- Private landowners (181)
- Florida Fish & Wildlife Conservation Commission
- South Florida, Southwest Florida, St. Johns, and Suwannee River Water Management Districts
- Other State of Florida agencies
- USDA - Natural Resources Conservation Service
- USDA-Farm Service Agency
- Various municipality and county agencies
- Allen Broussard Conservancy, Inc.
- Apalachicola Bay and River Keepers, Inc.
- The Nature Conservancy
- Archbold Biological Station
- Florida Audubon
- Conservancy of Southwest Florida
- Florida's Legacy Program
- Seminole Indian Tribe
- South Walton Sea Turtle Watch
- St. Andrew Resource Management Association
- Water Resources Partnership, Inc.
- Yellow Watershed Authority

### **References**

- Florida Fish and Wildlife Conservation Commission. 2005. Florida wildlife legacy initiative - comprehensive wildlife conservation strategy. Tallahassee, Florida. (<http://myfwc.com/wildlifelegacy>). Accessed, September 2005.
- U.S. Fish & Wildlife Service. 2006. Florida partners for fish and wildlife program brochure. Jacksonville, Florida Field Office (<http://www.fws.gov/partners/pdfs/FL-needs.pdf>). Updated June 2006.
- U.S. Fish & Wildlife Service. 2006. Draft partners for fish and wildlife program strategic plan for the southeast region – South Carolina. U.S. Fish and Wildlife Service, Charleston, South Carolina Field Office. August 2006.
- U.S. Fish & Wildlife Service. 2006. Strategic plan: Jacksonville field office. U.S. Fish and Wildlife Service, Jacksonville, Field Office.